

Method for driving multiple-module mechanisms by a single motor and redundant modular robots produced therefrom

Abstract

A method for driving multiple-module mechanisms by a single motor and redundant modular robots produced therefrom comprises a flexible shaft, which transports the rotation from only one irreversible motor to the mechanisms inside all multiple modules of the robot by means of a plurality of pairs of electromagnetic clutches and respective kits of transmission and driving wheels to distribute selectively the torque/rotation of the motor independently to anyone of the robot modules, electromagnetic breaks keep the desired pose of the robot. A simple control system regulates the speed of the motor and employs simple on-off logic control of the electromagnetic clutches and breaks based on feedback of a set of sensors measuring the angle between each two consecutive robot modules. The versatile kinematics provides the possibility the same construction to be used for implementing a manipulator arm, "elephant trunk", "snake" or "earthworm".